

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-7 and 10-18 in the reply filed on 04/11/08 is acknowledged. The traversal is on the ground(s) that no adequate reason had been given to show the patentable distinctiveness between the identified groups and on the grounds that there is not an undue burden in searching the claims of the five inventive groups.

The argument that there was no undue burden in searching the claims of Groups **I-IV**, claims 1-21 and 23, **has been found persuasive** and the claims of those groups have been brought into the elected group I. However, applicant's argument that there is no undue burden in searching groups **I-V** is **not found persuasive** because the invention of Group V, claim 22, is classified in class 427, subclass 162, while the invention of claims 1-21 and 23, is classified in class 428, subclass 212. MPEP § 808.02 recites that for the purposes of the initial requirement of a restriction, a serious burden on the examiner may be *prima facie* shown if the examiner shows by appropriate explanation either separate classification, separate status in the art, or a different field of search as defined in MPEP § 808.02. Since the Examiner has shown a different classification for the two groups of claims, a burden for examining both groups has been shown.

In summation, elected group I, **claims 1-21 and 23 are being examined on the merits of** this office action and non-elected claim 22 is withdrawn from consideration.

The requirement is deemed proper and is therefore made FINAL.

Claim Objections

2. Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim places a limitation on "n₂ and/or n₄" while claim 1 places the exact same limitation on both n₂ and n₄. The dependent claim is therefore broader in scope than the independent claim because it implies that one of n₂ or n₄ could not have the recited limitation.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Regarding claims 1, 2, 4, 5, 7, 8, 11, 18 and 20, the phrases "preferably" and "particularly" renders the claim indefinite because it is unclear whether the limitation(s) following the phrases are part of the claimed invention. See MPEP § 2173.05(d).

6. Regarding claims 16 and 18, the phrase "a mixed tin/zinc or silicon titanium oxide" is recited. This phrase is vague and indefinite in that it is unclear if the oxide is a "mixed oxide" or a mixture of different oxides and if so which oxides are candidates for the mixture (one of zinc or

tin and one of silicone or titanium or one of zinc or tin or silicon or titanium oxide). It would be remedial to change the phrase to “a mixed oxide of tin/zinc or a mixed oxide of silicon/titanium.”

7. Regarding claim 18, the phrase “possible for R to reach 10 cm” is recited. This phrase is vague and indefinite in that it is unclear exactly what parameter R is meant to be and moreover if R is meant, in fact, to be the radius of curvature it is unclear how this defines the bendability of the substrate since the length of the curvature is an extensive property, which does not necessarily correspond to the intensive bending property.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-17, 19-21 and 23 rejected under 35 U.S.C. 102(b) as being anticipated by Joret et al. (FR 2,800,998), see English language equivalent U.S. 6,924,037.

Regarding claim 1, Joret et al. discloses a transparent substrate, comprising on at least one of its faces an antireflection coating, particularly at normal incidence made of a multilayer (A) of thin layers made of dielectrical material with alternatively high and low refractive indexes, characterized in that the multilayer comprises, in succession: a high-index first layer (1), with a refractive index n_1 of between 1.8 and 2.2 and geometrical thickness of between 5 and 50 nm, a low-index second layer (2), with a refractive index n_2 of between 1.35 and 1.65 and a

geometrical thickness e_2 of between 5 and 50 nm, a high-index third layer (3) with a refractive index n_3 of between 1.8 and 2.2 and a geometrical thickness e_3 , a low-index depth fourth layer (4) with a refractive index n_4 and a geometrical thickness e_4 ;

(See Abstract and claim 1 of Joret et al. All the limitations are read upon practically verbatim with only the third and fourth layer thickness ranges not exactly matching. The disclosed third layer thickness (70-120 nm) substantially covers the claimed range with both endpoints lying within the claimed range. The disclosed fourth layer thickness (at least 80 nm) substantially covers the claimed range with the lower endpoint (80 nm) lying within the claimed range.)

Regarding claims 2-7, Joret et al. discloses all of the limitations as set forth above. Additionally the reference discloses a transparent substrate which reads on the limitations of claims 2-7

(See C3, L65-C4, L15, the disclosed ranges exactly match the ranges of instant claims 2, 4 and 5. The lower endpoint of the most preferred disclosed thickness of the third layer (at least 75 nm), lies within the claimed range of instant claim 6. The endpoints of the most preferred thickness of the fourth layer (80-110 nm), lie within the claimed range of instant claim 7. See Abstract, the disclosed range for the second and third layer refractive indexes exactly matches the limitations of instant claims 3.)

Regarding claims 8 and 9, Joret et al. discloses all of the limitations as set forth above. Additionally the reference discloses a transparent substrate wherein

- wherein the high-index first layer (1) and the low-index second layer (2) are replaced by an intermediate-index single layer (5) e_5 of between 1.65 and 1.80 and preferably having an optical thickness e_{pot5} of between 50 and 140 nm, preferably between 85 and 120 nm.
- wherein the intermediate-index layer (5) is based on a mixture of, on the one had, silicon oxide and, on the other hand, at least one metal oxide chosen from tin oxide, zinc oxide, titanium oxide or is based on a silicon oxynitride or oxycarbide and/or aluminum oxynitride.

(See C4, L15-35. The first and second layers are disclosed as being combined into an intermediate layer having exactly the same thickness and refractive index as the claimed ranges. The same materials for the intermediate layer are also disclosed.)

Regarding claims 10-13, Joret et al. discloses all of the limitations as set forth above. Additionally the reference discloses a transparent substrate which reads on the limitation of claims 10-13.

(See C4, L30-40, the materials for the first and third layers are, inter alia, silicon nitrides, as in instant claim 10. See C4, L60-C5, L5, the first or the third layers are disclosed as being made of SnO₂/Si₃N₄ or Si₃Na/SnO₂ bilayers. See C5, L15-30, the second and fourth layers are disclosed as being made of, inter alia, silicon oxide. See C5, L5-15, the substrate is disclosed as being made of, inter alia, clear glass.)

Regarding claims 14-17 Joret et al. discloses all of the limitations as set forth above. Additionally the reference discloses a transparent substrate which reads on the limitations of claims 14-17.

(See Examples 1-13, C13, L5-20, the reflectance of example 4 is 3% less than that of the uncoated substrate, (example 1, C9, L35-45) and the b* value is negative and in claims 14 and 15. See C4, L30-40, the materials for the first and third layers are, inter alia, silicon nitrides, which is disclosed as giving the invention heat treatment abilities (C15, L35-40). See C13, L20-30, the disclosed TABER test results of the examples are less than 3%, as in claims 16 and 17.)

Regarding claims 19-21 and 23, Joret et al. discloses all of the limitations as set forth above. Additionally the reference discloses a transparent substrate which reads on claims 19-21 and 23.

(See C6, L40-55, a multiple glazed unit is disclosed with two glass substrates with a thermoplastic PVB layer in between and with the disclosed four layered antireflective structure (A) on one side and on the other side a different antireflective structure (B), which is disclosed as meeting the limitations of the first embodiment of the second antireflective coating from instant claim 20 (i.e. single low-index layer of silicon oxide with the instant claimed refractive index ranges deposited by CVD, C7, L35-C8, L10). Also see C5, L25-35, a disclosed use of the substrate is for a shop counter.)

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1794

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joret et al. (FR 2,800,998), see English language equivalent U.S. 6,924,037, as applied to claim 1 and 16 above, and further in view of Katayama et al. (U.S. 2002/0051294).

Regarding claim 18, Joret et al. discloses all of the limitation as set forth above. Joret et al. does not disclose a substrate wherein the antireflection multilayer uses, at least for its high-index third layer, a mixed tin/zinc or silicon titanium oxide so that it is able to undergo

significant heat treatment, particularly curving, bending, of great severity, it being possible for R to reach 10 cm.

Katayama et al. discloses substrate wherein the antireflection multilayer uses, at least for its high-index third layer, a mixed tin/zinc or silicon titanium oxide so that it is able to undergo significant heat treatment, particularly curving, bending, of great severity.

(See [0153], the first two high refractive index layers ([0141]) of the antireflective coating are disclosed as being made of, inter alia, mixed oxide of zinc and tin and mixed oxide of titanium and silicon. Also see [0017], the general invention of Katayama et al. has excellent heat bending or tempering abilities. The instant claimed properties, (severity of bending), would become inherent in the substrate of Joret et al. with the high refractive index mixed oxides of Katayama et al. due to the subsequently substantially identical layered structure and layered composition with the instant claimed substrate.)

The inventions of both Joret et al. and Katayama et al. are drawn to the field of antireflective films and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the high refractive index oxides of Joret et al. by using the mixed oxides of Katayama et al. for the purposes of imparting improved heat bending and tempering abilities.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined

Art Unit: 1794

application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1-17, 19-21 and 23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-37 of U.S. Patent No. 6,927,037. Although the conflicting claims are not identical, they are not patentably distinct from each other because where the claimed ranges differ (i.e. the thickness ranges for the third and fourth layers in the stack structure), there is substantial overlap between the two sets of claimed ranges to the point that one of ordinary skill in the art would not see the claimed inventions as patentably distinct from one another.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL B. NELSON whose telephone number is (571) 270-3877. The examiner can normally be reached on Monday through Thursday 6AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MN/
05/12/08

/Carol Chaney/
Supervisory Patent Examiner, Art Unit 1794